



Smart Barrier with Mega Test

The Smart Barrier provides

- Frozen Contactor, FC and
- Earth Leakage Lockout, ELL, using a megger test, for restrained outlets.

Features

The Smart Barrier requires as input, a signal indicating the state of the contactor (AR contact) and 3 phase wires coupled to the load side of the contactor and an earth.

Earth Leakage Lockout - ELL

Earth Leakage Lockout will prevent contactor closure if any phase to earth resistance is below an acceptable level. Megger testing is carried out before the line contactor is allowed to close at each start.

Designed for failsafe operation, the barriers resistive integrity is ensured by internal Smart Barrier testing algorithm. Megger test is only allowed when the pilot circuit is healthy. Barrier fault, or under voltage on any phase will cause the ELL relay to open the line contactor.

Frozen Contact/ Loss of Vacuum - FC/LOV

If there is a voltage of 24 volts or greater on any of the load circuit phases, a FC trip will result. This function only occurs while the contactor is open.

The FC trip function has its own separate contacts which enables "back tripping", disconnecting the under voltage coil, of the feed circuit breaker to remove supply.

Operation

When 110VAC power is applied to the module, an internal low voltage test of the Smart Barrier internal resistive barrier is performed.

The pilot circuit must be healthy before any megger test is carried out. This pilot status information is sent to the Smart Barrier via the RS485 serial link from the Mega Smarty, or from a Healthy Pilot contact. When the Start button is pushed, a 1000V integrity test of the Smart Barrier resistive barrier is performed.

If OK, the 1000V megger test is then applied to each phase of the outgoing cable. If the resistance to earth on any phase is less than nominal 1Meg Ohms, the ELL relay will not operate, preventing the main contactor from closing. The Smart Barrier will not allow the contactor to close until the low earth resistance fault has been cleared. While the ELL relay remains closed, wired in series with DR1 contact from the Smarty, the contactor will be closed, using a latching contact across the Start button. The Smart Barrier monitors the phase voltages, for phase loss, and the resistive barrier for integrity while the contactor is closed. Any loss of phase for more than 5 seconds will drop out of the ELL relay. This is not a latching function.

When the line contactor is opened, for any reason, opening AR, a 30 second timer is used to disable FC trip monitoring for high inertia motor run down. The timer will prevent a new Start attempt for 30 seconds. Should the pilot be opened while the contactor is closed, the ELL will open, and open the contactor. Restart is only possible if the pilot is healthy.



Specifications

Line voltages

- 1000V, 3300V

Control voltage

- 110VAC 2VA

FC/VOL trip voltage

- above 24VAC

ELL sense

- 1Meg ohm nominal @1000V DC

ELL Tolerance

- -50 +100%

ELL, FC Relay contacts

- 1C.O 2A120V AC

External Inputs

- Start contact, AR AuxRelay, EC Healthy (contact or status via serial link)

Under Voltage

- 20% of phase voltage

Test Function

- Failsafe with integral testing

AR timer on open

- 30 seconds for FC inhibit

Serial Ports

- RS485 to Mega Smarty, 9600 baud Modbus ASCII.
- Optional RS232 to PLC, 9600 baud Modbus ASCII

Connection

- 4 Flexible leads for phase voltages and Earth.
- Screw terminal/polarized plugs for other connections

Enclosure

- 60mm x 230mm, panel mounting footprint x 190mm deep.
- Mounted in any position using 4 x 5mm holes in base plate.

Free standing operation

The Smart Barrier can be used as a free standing, FC/LOV, ELL protection module, independent of Mega Smarty, by using a separate EC relay for pilot status input. Suitable for single and multi outlet protection.

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